國立成功大學

114學年度碩士班招生考試試題

編　號：234

系　所：經濟學系

科　目：個體經濟學

日　期：0210

節　次：第 2 節

注　意：1.不可使用計算機
2.請於答案卷(卡)作答，於試題上作答，不予計分。

請考生注意以下答題規定(English version of this instruction is available on page 2)：

1. 本試題禁止使用計算機。
2. 請在答案卷上作答，非在答案卷上作答者，將不予計分。
3. 本試題共 10 題，均為**單一選擇題**，每題僅有一個正確「選項」。如題目有多個正確答案，應選擇包含所有正確答案的「**唯一選項**」。若各選項均無正確答案則應選「以上皆非」。例如，若題目與選項如下：

   Q0. 小於 3 的數字包括以下哪些?

   A. 1

   B. 2

   C. 3

   D. 4

   E. Both A & B

   F. Both A & C

   G. Both A & D

   H. None of the above

   上例給分之正確答案為選項 E。**回答不完整選項者（如選項 A）或回答多於一個選項者（如在答案卷上同時填寫 A 與 B），均不予給分。**

4. 請在答案卷**第一頁**上依順序標明各題**題號**（Q1, Q2, ..., Q10），並填寫正確選項即可（例如 Q0: E）。**答案卷第一頁請勿寫入題號與答案以外內容。**
5. 答案卷中不需提供計算過程，不需寫下選項內容。
6. 答案卷第二頁開始可作為草稿紙使用(草稿紙內容並不計分) 。
7. 若未遵循答題規定(包括但不限於：未標明題號、題號不明等，答案不易尋找辨識等)，將不予給分。
8. 各題分數獨立計算，不影響其他題分數。

Examinees are required to adhere to the following instructions:

1. The use of calculators is strictly prohibited in this examination.
2. Only answers recorded on the designated answer sheet will be considered for grading.
3. There are 10 questions in this examination. All questions are single-select multiple-choice questions, meaning there is only **ONE** correct ***option*** for each question. If multiple answers are correct, you must select the **only option** that includes all correct answers. If no option is correct, choose "None of the above." For example:

   Q0. Which of the following numbers is/are less than 3?
   A. 1
   B. 2
   C. 3
   D. 4
   E. Both A & B
   F. Both A & C
   G. Both A & D
   H. None of the above

   In this case, the correct answer is **E**. Responses that are incomplete (e.g., selecting "A") or that include multiple options (e.g., writing both "A" and "B" instead of selecting "E" alone) will not receive any points.

4. On the **first page** of the answer sheet, list the question numbers in sequential order (e.g., Q1, Q2, ..., Q10) and record only the corresponding options (e.g., Q0: E). Do **NOT** include any content other than the question numbers and their respective answers on the first page.
5. There is **NO** need to provide calculations or write out the full content of the options.
6. Starting from the second page of the answer sheet, you may use the space as scratch paper (contents of **the scratch paper will not be graded**).
7. Failure to follow these instructions—including, but not limited to, omitting question numbers, unclear numbering, or answers that are difficult to locate or identify—will result in no points being awarded.
8. Each question is evaluated independently, with no impact on the scores of other questions.

Q1. (10pts) Consider a perfectly competitive market in a constant-cost industry where firms share the homogeneous production function for output q, defined in terms of capital (K) and labor (L) as:

$$q(K,L) = K^{\alpha}L^{1/4}$$

The interest rate and wage rate are given as $r = 1$ and $w = 2$, respectively. In the short run, capital is fixed at $K = 1$. The market demand is $Q = 100 - 5P$, where P is the price and $P > 0$. Which of the following statements is/are true?

A. Short-run average cost is $\frac{1+2q^4}{q}$

B. Short-run marginal cost is $8q^{\alpha-1}$

C. Short-run average variable cost is $2q^3$

D. The short-run supply function for each firm is: $\frac{P^{1/3}}{8}$

E. Both A and B

F. Both A and C

G. Both A and D

H. Both B and C

I. Both B and D

J. Both C and D

K. A, B, and C

L. A, B, and D

M. A, C, and D

N. B, C, and D

O. A, B, C, and D

P. None of the above

Q2. (10pts) Following Q1, if $\alpha = \frac{3}{4}$. Which of the following statements is/are true?

A. The long-run cost function is: $8q \cdot 6^{(-3/4)}$

B. The long-run average cost is: $8 \cdot 6^{(-3/4)}$

C. The long-run marginal cost function is: $8q \cdot 6^{(-3/4)}$

D. The long-run marginal cost is: $8 \cdot 6^{(-3/4)}$

E. Both A and B

F. Both A and C

G. Both A and D
H. Both B and C
I. Both B and D
J. Both C and D
K. A, B, and C
L. A, B, and D
M. A, C, and D
N. B, C, and D
O. A, B, C, and D
P. None of the above

Q3. (10pts) Consider for a good x, the market demand and the market supply (without government intervention) are:

Demand: $q_d = 100 - P$

Supply: $\begin{cases} q_s = 10P - 10 & if \quad P \geq 1 \\ q_s = 0 & otherwise \end{cases}$

Here, P represents the price, and q_s and q_d represent the quantities. Assume the market is perfectly competitive. Now, the government may introduce a policy imposing a per-unit tax of \$10 on producers. Under this policy, for each unit sold, producers receive $P-10$, where P is the price paid by consumers, and \$10 is collected by the government as tax. Which of the following statements is/are true?

A. Without the tax policy, the equilibrium price and quantity are 10 and 90, respectively.
B. With the tax policy implemented, the supply function becomes $\begin{cases} q_s = 10P - 110 & if \quad P \geq 1 \\ q_s = 0 & otherwise \end{cases}$
C. Without the tax policy, the producer surplus (PS) is nine times of the consumer surplus (CS) (i.e., PS = 9CS).
D. With the tax policy implemented, the producer surplus is $5 * \left(\frac{89}{11}\right)^2$
E. Both A and B
F. Both A and C
G. Both A and D
H. Both B and C
I. Both B and D
J. Both C and D
K. A, B, and C

L. A, B, and D
M. A, C, and D
N. B, C, and D
O. A, B, C, and D
P. None of the above

Q4. (10 pts) Suppose a consumer has income M and faces two items, x and y, with a utility function as $u(x,y) = xy - 5y$. Let p_x and p_y be the prices for x and y, respectively. Which of the following statements is/are true?

A. The indifference curves are strictly convex to the origin if $x > 1/5$
B. This preference satisfies strict monotonicity.
C. The Marshallian demand function for x is $\frac{M+5p_x}{2p_x}$
D. The Marshallian demand function for y is $\frac{M-5p_x}{2p_x}$
E. Both A and B
F. Both A and C
G. Both A and D
H. Both B and C
I. Both B and D
J. Both C and D
K. A, B, and C
L. A, B, and D
M. A, C, and D
N. B, C, and D
O. A, B, C, and D
P. None of the above

Q5. (10pts) Which of the following statements is/are true if someone has the utility function of two goods, x_1 and x_2 as:

$$u(x_1, x_2) = (x_1 - \gamma_1)^{\alpha}(x_2 - \gamma_2)^{\beta}$$

A. If x_1 is not pollutant, it must have $\alpha > 0$
B. If x_2 is not pollutant, it must have $\beta > 0$

C. If $\gamma_1 > 0$ and $\gamma_2 > 0$, a consumer with this preference will have a consumption set such that $x_1 > 0$ and $x_2 > 0$

D. It is possible for a rational consumer to have $\gamma_1 < 0$ and $\gamma_2 < 0$.

E. Both A and B

F. Both A and C

G. Both A and D

H. Both B and C

I. Both B and D

J. Both C and D

K. A, B, and C

L. A, B, and D

M. A, C, and D

N. B, C, and D

O. A, B, C, and D

P. None of the above

Q6. (10pts) Following Q5, assume that $\alpha + \beta = 1$ and market prices are p_1 and p_2, which of the following statements is/are true?

A. The Hicksian demand for good 1 is $h_1 = u\left(\frac{\alpha}{\beta}\frac{p_1}{p_2}\right)^{\alpha} + \gamma_1$

B. The Hicksian demand for good 2 is $h_2 = u\left(\frac{\beta}{\alpha}\frac{p_1}{p_2}\right)^{\alpha} + \gamma_2$

C. The expenditure function is homogeneous in prices.

D. The indirect utility function is $p_1^{-\alpha}p_2^{-\beta}\alpha\beta[M - p_1\gamma_1 - p_2\gamma_2]$, in which M is the income.

E. Both A and B

F. Both A and C

G. Both A and D

H. Both B and C

I. Both B and D

J. Both C and D

K. A, B, and C

L. A, B, and D

M. A, C, and D

N. B, C, and D

O. A, B, C, and D

P. None of the above

Q7. (10pts) Consider a game represented by the following matrix, involving two players, P_1 and P_2, each with two pure strategies, O and F. In each cell, the first number represents Player P_1's payoff, and the second number represents Player P_2's payoff. Which of the following statements about the Nash equilibrium of this game is/are true?

		P_2	
		O	F
P_1	O	3, 1	0, 0
	F	0,0	1, 3

A. There is a Nash equilibrium of this game where P_1 plays O and P_2 plays O.

B. There is a Nash equilibrium of this game where P_1 plays F and P_2 plays O.

C. This game has three Nash equilibria.

D. This game has four Nash equilibria.

E. Both A and B

F. Both A and C

G. Both A and D

H. Both B and C

I. Both B and D

J. Both C and D

K. A, B, and C

L. A, B, and D

M. A, C, and D

N. B, C, and D

O. A, B, C, and D

P. None of the above

Q8. (10 pts) Consider a game represented by the following matrix with *incomplete information*: two players, P_1 and P_2, each with two pure strategies, O and F. In each cell, the first number represents Player P_1's payoff, and the second number represents Player P_2's payoff. P_1 knows k but does not know the value of m. P_2 knows m but does not know the value of k. Yet, both players know that k and m are independently and uniformly distributed over $[0, x]$.

		P_2	
		O	F
P_1	O	2+k, 1	0, 0
	F	0,0	1, 2+m

Now consider a pure strategy Bayesian Nash equilibrium of this game where:

$$P_1 \text{ plays } \begin{cases} O & \text{if } k \text{ is above a threshold } k^* \\ F & \text{otherwise} \end{cases}$$

$$P_2 \text{ plays } \begin{cases} O & \text{if } m \text{ is below a threshold } m^* \\ F & \text{otherwise} \end{cases}$$

Which of the following statements is/are true?

A. $k^* = m^* = 1$.

B. $k^* = m^* = 1/3$.

C. $k^* = m^* = 3 + \frac{\sqrt{9+4x}}{2}$.

D. The probability that P_1 plays O and the probability that P_2 plays F approach 2/3 as x approaches zero.

E. Both A and B

F. Both A and C

G. Both A and D

H. Both B and C

I. Both B and D

J. Both C and D

K. A, B, and C

L. A, B, and D

M. A, C, and D

N. B, C, and D

O. A, B, C, and D

P. None of the above

Q9. (10 pts) Consider a game in which N players are asked to choose any number in [0, 100]. Let x_i be the choice of player i = 1,…,N. The player whose choice is closest to 2/3 of the average of all players' choice (i.e., $\bar{x} = \frac{1}{N}\sum_{i=1}^{N} x_i$) earns \$100 and everyone else earns \$0. That is, the payoff of player i is the following if there are no ties:

$$u_i(x_1, \dots, x_N) = \begin{cases} 100 & if \ \left|x_i - \frac{2}{3}\bar{x}\right| = \min\left\{\left|x_j - \frac{2}{3}\bar{x}\right|, for\ all\ j = 1, \dots, N\right\} \\ 0 & otherwise \end{cases}$$

When there is a tie, the players who tied split $100 evenly. Which of the following statements regarding the iterated elimination of dominated strategy (IEDS) solution of this game is/are true?

A. The IEDS (weak dominance) solution is 100
B. The IEDS (weak dominance) solution is 200/3
C. The IEDS (weak dominance) solution is 0
D. All players have to be perfectly rational for the IEDS (weak dominance) solution
E. Knowledge of perfect rationality among all players is not a necessary condition for the IEDS (weak dominance) solution
F. Both A and D
G. Both A and E
H. Both B and D
I. Both B and E
J. Both C and D
K. Both C and E
L. Both D and E
M. A, D, and E
N. B, D, and E
O. C, D, and E
P. None of the above

Q10. (10 pts) Which of the following statements is/are true?

A. If a demand function is linear, the price elasticity of demand becomes inelastic as the quantity demanded approaches zero.
B. If all individual demand functions are linear, the aggregate market demand function must also be linear.
C. Consider an economy with two goods, x and y, and two farmers who both produce and consume these goods, no government intervention is sole necessary condition for achieving an optimal outcome derived from a perfectly competitive market.
D. If the right to emit CO_2 is well-defined, the economy will reach an optimal outcome regardless of how this right is allocated.
E. Both A and B
F. Both A and C

G. Both A and D

H. Both B and C

I. Both B and D

J. Both C and D

K. A, B, and C

L. A, B, and D

M. A, C, and D

N. B, C, and D

O. A, B, C, and D

P. None of the above